BROOKHAVEN NATIONAL LABORATORY

Laboratory Link

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Brookhaven Lab: Celebrating 60 Years of Scientific Success

The nation's first national laboratory for peaceful, civilian research turns 60

Brookhaven Lab on its founding day, March 21, 1947

- The year was 1946, a year after end of World War II, when university physics professors from Northeast U.S.—two of whom would later win the Nobel Prize—decided that the federal government-university scientist partnership that collaborated in the Manhattan Project could again be wedded to build the nation's first national laboratory for non-weapons related, peacetime research.
- The government agreed, and so a surplus War Department property known as Camp Upton during World War I, the Upton National Forest during the Great Depression and Camp Upton again during World War II became the new lab's destination.
- Located within the then backwoods of Long Island, the site of what would be named Brookhaven National Laboratory was near enough to New York City so that scientists from Northeast U.S. universities and industry could commute to use its research facilities—"big machines" for science which, because of their size and scope, are not available at universities, within industry or at smaller labs.
- And, following its use during World War II, the Lab's site then featured Army barracks which would make due as laboratory space, as well as open space upon which to build modern research facilities.
- So, on March 21, 1947, the then U.S. War Department transferred the site and its structures to what was then the Atomic Energy Commission (AEC), the federal agency that oversaw the founding of BNL and evolved into the U.S. Department of Energy (DOE).
- Today, DOE's Office of Science is the nation's biggest supporter of basic research in the physical sciences and provides the majority of Brookhaven Lab's research dollars and direction. Through the investment of those federal tax dollars, we have evolved into the large, multi-purpose, internationally recognized institution that is the DOE's Brookhaven National Lab today.
- Now, 60 years after our founding, Brookhaven Lab is looking back, celebrating our scientific successes, the most notable of which are our six Nobel Prizes (see back). We are also looking forward to our newest facilities for scientific research, such as the Center for Functional Nanomaterials, which is opening this May as DOE's fifth nanoscience center in the nation.
- For more information about the Brookhaven Lab's 60 years of scientific success and its research facilities and programs of the future, look for upcoming issues of Laboratory Link.

Turn the page for more about BNL's 60th ⇨

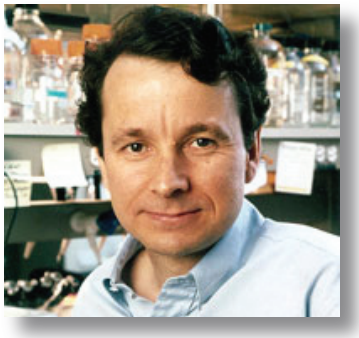
Celebrating 60 Years of Scientific Success

Brookhaven Lab's Record: Six Nobel Prizes Over 60 Years

"for pioneering contributions to astrophysics, in particular for the detection of cosmic neutrinos"

• **2002 Nobel Prize in Physics** was shared by the late BNL chemist Raymond Davis Jr. of the Lab's Chemistry Department, who performed an experiment from 1967 to 1985 in the Homestake gold mine in the Black Hills of South Dakota that was the first to detect particles called neutrinos coming from the Sun, thereby proving that a reaction called fusion powers the Sun.

"for discoveries concerning channels in cell membranes," specifically "for structural and mechanistic studies of ion channels"

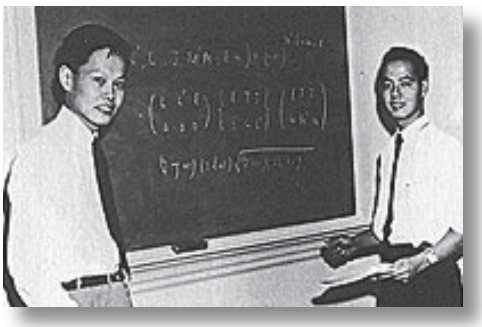


• **2003 Nobel Prize in Chemistry** was shared by Rockefeller University biophysicist and National Synchrotron Light Source (NSLS) user Roderick MacKinnon, who employed the NSLS for some of the experiments by which he determined the biological structure and function of ion channels, which, for instance, move salts in and out of cells in the nervous system and cardiac system within the human body.

"for the neutrino beam method and the demonstration of the doublet structure of the leptons through the discovery of the muon neutrino"

• **1988 Nobel Prize in Physics** was awarded to three BNL facility-users then from Columbia University — physicists (from left) Jack Steinberger, the late Mel Schwartz and Leon Lederman — who used the Alternating Gradient Synchrotron accelerator at Brookhaven Lab to discover a second type of particle called the neutrino, specifically the muon neutrino.

"for their penetrating investigation of the . . . parity laws which has led to important discoveries regarding the elementary particles"

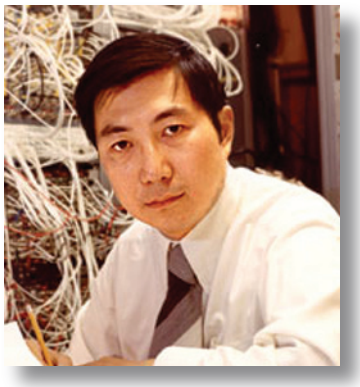


• **1957 Nobel Prize in Physics** was awarded to BNL visiting theoretical physicists T.D. Lee (below, right), then of Columbia University, and C.N. Yang, then of the Institute for Advanced Studies, who used data from the Cosmotron, the Lab's first particle accelerator, to uncover "parity non-conservation," which explains the difference between the real world and its mirror opposite.

"for the discovery of violations of fundamental symmetry principles in the decay of neutral K-mesons"

• **1980 Nobel Prize in Physics** was awarded to two visiting researchers — physicists Val Fitch (left) and James Cronin then of the University of Chicago — who also used BNL's Alternating Gradient Synchrotron accelerator to discover what is called "CP violation," which led to the explanation of the predominance of matter over antimatter in the universe.

"for . . . pioneering work in the discovery of a heavy elementary particle of a new kind"



• **1976 Nobel Prize in Physics** was shared by Samuel Ting of the Massachusetts Institute of Technology, who used the Alternating Gradient Synchrotron at Brookhaven to co-discover the J/psi particle, which is the first particle to be found containing the "charm" quark.